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Observations of the Phenomena of Jupiter's Satellites at Bermerside Observatory, Halifax, in the year 1892. By Joseph Gledhill.

Day of Obs.	Satellite.	Phenomenon.	Phase.	G.M.T. of Observation.			*N. Almanac* Time.			Remarks.
1892.				h	m	s	h	m	s	
Jan. 1	I.	Tr. I.	Ext. contact.	5	42	0	5	42		Poor definition.
			Int. contact.	5	44	30				
	I.	Sh. I.	Int. contact.	6	56	30	6	54		
Sept. 8	II.	Sh. I.	Int. contact.	10	33		10	27		Good definition.
	II.	Tr. I.	Ext. contact.	12	10	30	12	10		
			Bisection.	12	13					
			Int. contact.	12	15					
10	I.	Sh. I.	Int. contact.	9	18		9	16		Bad definition.
	II.	Oc. R.	Bisection.	9	25		9	25		
			Ext. contact.	9	27					
	I.	Tr. I.	Ext. contact.	10	6		10	4		
13	III.	Ec. D.	Fading?	11	34	30	11	38	13	Good definition.
			Fading.	11	36	30				
			Half gone.	11	38	30				
			Just gone.	11	40	47				
	III.	Ec. R.	First seen.	13	45	2	13	49	46	
			Half out.	13	48					
			Full brightness	13	53					
17	I.	Sh. I.	Int. contact.	11	11	30	11	10		Fair definition.
	II.	Oc. R.	Bisection.	11	40	30	11	41		
			Ext. contact.	11	41	30				
	I.	Tr. I.	Ext. contact.	11	48	30	11	49		
			Bisection.	11	50	30				
			Int. contact.	11	51	30				
24	III.	Tr. E.	Bisection.	9	35		9	42		Fair definition.
			Ext. contact.	9	43					
	II.	Ec. D.	Half gone.	10	33		10	35	1	
			Just gone.	10	35	15				
25	I.	Ec. D.	Fading?	10	15		10	18	11	
			Fading.	10	16					
			Half gone?	10	17					
			Just gone.	10	18	40				
26	I.	Tr. I.	Ext. contact.	7	58	30	7	59		
			Bisection.	8	0					
			Int. contact.	8	3					

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Day of Obs.	Satellite.	Phenomenon.	Phase.	G.M.T. of Observation.			*N. Almanac* Time.			Remarks.
1892.				h	m	s	h	m	s	
Sept. 26	II.	Tr. E.	Int. contact.	8	18		8	20		
			Bisection.	8	21					
			Ext. contact.	8	24					
	I.	Sh. E.	Int. contact.	9	45		9	46		
			Just off?	9	47	30				
Oct. 4	I.	Oc. R.	Bisection.	9	3		9	5		Cloudy.
			Ext. contact.	9	5					
10	II.	Sh. I.	First seen on disc.	10	18		10	18		
			Int. contact.	10	20					
	II.	Tr. I.	Int. contact.	10	29		10	27		Cloudy.
11	I.	Ec. D.	Fading?	8	30		8	37	5	Fair definition.
			Fading.	8	32					
			Half gone.	8	34					
			Contact with planet?	8	35					
			Just gone.	8	36	54				
	I.	Oc. R.	First seen.	10	46		10	49		
			Bisection.	10	48					
			Contact.	10	50					
17	II.	Tr. I.	Ext. contact.	12	38		12	42		Good definition.
			Bisection.	12	40					
			Int. contact.	12	42					
	II.	Sh. I.	First seen.	12	54		12	56		
			Bisection?	12	55					
			Int. contact.	12	57					
	I.	Tr. I.	Ext. contact.	13	7		13	8		
			Bisection.	13	9					
			Int. contact.	13	10	30				
	I.	Sh. I.	First seen.	13	16		13	16		
			Bisection.	13	17					
			Int. contact.	13	18	30				
18	I.	Oc. D.	Ext. contact.	10	20		10	21		Fair definition.
			Bisection.	10	22					
			Just gone.	10	22	15				
	I.	Ec. R.	First seen.	12	40	50	12	41	39	Fair definition.
			Half out?	12	43					
			Full brightness?	12	47					

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Day of Obs. 1892.	Satellite.	Phenomenon.	Phase.	G.M.T. of Observation. h m s	*N. Almanac* Time. h m s	Remarks.
Oct. 19	III.	Ec. R.	First seen.	9 51 10	9 53 46	The satellite would have been seen some seconds sooner but for cloud.
			Half out?	9 53		
			Fully out?	9 56		
	I.	Sh. E.	Int. contact.	9 57	9 58	
	II.	Ec. R.	First seen.	10 4 31	10 3 7	Bad sky to-night.
			Half out.	10 7 0		
			Fully out.	10 8 30		
25	I.	Oc. D.	Ext. contact.	12 3 30	12 5	Fair definition.
			Bisection.	12 5 30		
			Just gone.	12 7 15		
28	II.	Sh. E.	Int. contact.	7 24	7 26	Cloudy.
Nov. 3	I.	Oc. D.	Contact.	8 14	8 16	Very bad definition.
			Just gone.	8 17		
4	II.	Sh. E.	Int. contact.	10 1	10 5	Cloudy.
11	I.	Tr. I.	Ext. contact.	7 13 30	7 13	Fair definition.
			Bisection.	7 15 30		
			Int. contact.	7 17 0		
	I.	Sh. I.	First seen.	7 57 0	7 58	
			Bisected.	7 58 30		
			Int. contact.	8 0 0		
	II.	Tr. I.	Ext. contact.	8 38 30	8 44	
			Bisection.	8 41 30		
			Int. contact.	8 43 30		
	I.	Tr. E.	Int. contact.	9 23 0	9 26	
			Bisection.	9 25 0		
			Ext. contact.	9 26 0		
	II.	Sh. E.	Int. contact.	10 6 30	10 10	
			Bisection.	10 8 0		
29	II.	Sh. I.	Int. contact.	4 51	4 50	Stormy.
	II.	Tr. E.	Int. contact.	5 6	5 12	Stormy.
			Ext. contact.	5 11		
	II.	Sh. E.	Int. contact.	7 16	7 19	Stormy.
Dec. 1	III.	Oc. R.	Ext. contact.	5 40	5 45	Very cloudy.
	III.	Ec. D.	Fading?	8 1	8 5 52	Very cloudy.
			Half gone?	8 5		
			Just gone.	8 9 18		

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Day of Obs.	Satellite.	Phenomenon.	Phase.	G.M.T. of Observation.			*N. Almanac* Time.			Remarks.
1892.				h	m	s	h	m	s	
Dec. 6	II.	Tr. I.	Ext. contact.	5	4		5	8		Bad definition.
			Bisection?	5	6					
			Int. contact.	5	8					
	II.	Sh. I.	First seen.	7	27	30	7	30		
			Int. contact.	7	29	30				
	II.	Tr. E.	Int. contact.	7	34		7	41		
			Bisection?	7	36					
			Ext. contact.	7	37					
	II.	Sh. E.	Int. contact?	9	52		9	58		
12	I.	Oc. D.	Ext. contact.	6	11		6	12		Much cloud passing.
			Bisection?	6	13					
			Last seen.	6	14	30				
	I.	Ec. R.	First seen.	9	38	6	9	37	39	A bad night.
			Half out?	9	41	0				
			Full?	9	44	30				
13	I.	Sh. I.	First seen.	4	37	30	4	37		Strong twilight.
			Int. contact.	4	39					
	I.	Tr. E.	Int. contact.	5	34		5	36		Bad definition.
			Bisection.	5	35					
			Ext. contact.	5	37					
	I.	Sh. E.	Int. contact.	6	45		6	50		Bad definition.
	II.	Tr. I.	Ext. contact.	7	32		7	37		
			Bisection.	7	35					
			Int. contact.	7	36	30				
15	II.	Ec. R.	First seen.	6	50	10	6	49	12	Bad sky.
			Half out?	6	51	30				
			Full?	6	53					
	III.	Oc. D.	Ext. contact.	10	46		10	48		Planet low.
			Bisection.	10	49					Much motion.
			Just gone.	10	53					Poor definition.
26	III.	Tr. I.	Ext. contact.	4	44	40	4	42		Fair definition.
			Bisection?	4	50					
			Int. contact.	4	53					
	I.	Oc. D.	Ext. contact.	9	57		9	58		Much motion.
			Bisection.	9	59					
			Last seen.	10	1					
	III.	Sh. I.	First seen.	10	14	30	10	15		Bad definition.
			Int. contact.	10	18					

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Day of Obs.	Satellite.	Phenomenon.	Phase.	G.M.T. of Observation.	*N. Almanac* Time.	Remarks.
1892.				h m s	h m s	
Dec. 27	I.	Tr. I.	Ext. contact.	7 9 30	7 7	Good definition.
			Bisection.	7 11 30		
			Int. contact.	7 12 30		
	I.	Sh. I.	First seen.	8 27	8 28	
			Int. contact.	8 30		
	I.	Tr. E.	Int. contact.	9 18	9 21	Definition not good.
			Bisection.	9 20		
			Ext. contact.	9 22 30		
28	I.	Ec. R.	First seen.	7 58 44	7 58 24	Some cloud.

Instrument: The $9\frac{1}{3}$ inch Cooke equatoreal refractor; power 240.

January 1.—Satellite I. was invisible at $6\frac{1}{2}^{\rm h}$; was a little brighter than the limb of *Jupiter* at ingress.

September 8.—Satellite II. much brighter than limb of planet at ingress; its shadow was black all through its transit.

"Red Spot" exceedingly faint; preceding end central at $10^{\rm h}\pm$; following end central at $10^{\rm h}\ 35^{\rm m}\pm$. Dark and bright spots on the belts.

September 10.—Satellite I. brighter than limb of *Jupiter* at ingress.

September 13.—"Red Spot" very faint and difficult to see.

September 24.—Satellite III. was visible throughout transit. A small bright circular spot, like a satellite in transit, was seen on the southern edge of the "Red Spot" zone; central about $9^{\rm h}\ 30^{\rm m}$.

September 26.—At $8^{\rm h}\ 30^{\rm m}$ Satellite I. was invisible on disc. At $9^{\rm h}\ 40^{\rm m}$ it was still invisible.

October 11.—Satellite I. much brighter than the adjacent limb of *Jupiter* at reappearance.

October 17.—Satellite II. much brighter than the limb when it passed on to the disc; soon grew faint; quite invisible half an hour after ingress.

Satellite I. very much brighter than the limb at ingress.

November 11.—Satellite I. brighter than the limb of *Jupiter* at ingress; invisible at $8^{\rm h}$ and $9^{\rm h}$ and till $9^{\rm h}\ 15^{\rm m}$.

Satellite II. much brighter than the limb of the planet at ingress; visible at $9^{\rm h}$; invisible at $9^{\rm h}\ 15^{\rm m}$.

November 29.—Satellite II. was invisible at $4^{\rm h}\ 30^{\rm m}$ and $4^{\rm h}\ 50^{\rm m}$.

December 6.—Satellite II. was invisible at $6^{\rm h}$ and at $7^{\rm h}$.

December 13.—Satellite I. invisible from $4^{\rm h}$ till $5^{\rm h}\ 25^{\rm m}$ during its transit.

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Note on the Red Spot on Jupiter. By Joseph Gledhill.

This well-known object was carefully looked for as soon as the planet came into a good position for observation.

1892 July.—Could never obtain a view of the whole outline of the spot. No trace of colour.

August.—At moments of best definition portions of the outline were with difficulty seen.

September.—The preceding and following ends were glimpsed, but never the whole. On the 8th it was on the central meridian about 10^h 15^m, but the observation was necessarily very uncertain.

September 13.—Red Spot very faint, but most of the outline was seen.

October.—A very difficult object; no colour; the ends were occasionally fairly seen.

November.—On the 10th it was probably on the central meridian about 8^h 15^m; it was a mere glimmer of an outline, and seen only at best moments.

December 6.—The Red Spot was central about 9^h 55^m; it was seen with great difficulty; perhaps the whole outline was seen at best moments, and there was also a slight tinge of warm colour. The time of central transit was therefore very difficult to observe.

Bermerside Observatory, Halifax.

Observations of the Phenomena of the Satellites of Saturn at Bermerside Observatory, Halifax, in the year 1892. By Joseph Gledhill.

Instrument, the 9⅓ inch Cooke equatoreal refractor; powers 240 and 300.

These very difficult observations were begun in January, but, owing to cloudy weather and bad definition, no results worth recording were obtained till April; and it was soon very evident that the refractor was hardly capable of dealing with these phenomena.

April 4.—*Dione* E elongation. Difficult. In line at 8^h·55? Past at 9^h·10. *Enceladus* invisible.

April 8.—Moon not far from *Saturn*. *Tethys* not seen at 7^h when at E elongation.

Rhea θ. Not up at 8^h·20. Past at 8^h·30. Cloudy after 10^h.

April 9.—*Dione* ϵ. Seen with great difficulty. Moon very near *Saturn*. On tangent to end of ring (E) between 7^h·50 and 7^h·55.

April 10.—Cloudless. *Saturn* very beautifully seen.

Dione ζ. The satellite easily seen at 8^h·40, but as it got near the ring it became a difficult object. It was not on the tangent